**ICESat-2 PROJECT SCIENCE OFFICE REPORT**
**Monday, April 29, 2019 thru Sunday, May 5, 2019**

RGTs spanned: 470-576
Cycle 3

**Items of Note**:
All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. SIPS Build 4.1 was successfully installed on May 3 and is now operational, and it includes ASAS V5.1 (part 2) and SDMS V6.15.0 & ATLAS V1.13.0. This will be the last internal release of data prior to public data release later this month. A persistent issue with CAL 49 (receiver skews) reached a potential solution/conclusion. The ATL02 ATBD will be corrected to reflect this change immediately, and the error in the current version of CAL 49 will be noted in the "ATL02 Known Issues" document to accompany Release 001. A corrected version of CAL 49 will be used for Release 002.

**ELEMENT DETAILS BELOW**

**CAMS/POD/PPD**:
**CAMS**: Regular CAMS operations continue with constraint and conjunction monitoring for mission week 34, and mission planning for mission week 35.

**POD**: Regular POD operations continue. Final POD for GPS week 2048 was completed. Intermediate POD for GPS weeks 2049 & 2050 is on hold as we migrate to the new server that provides Vienna Mapping function grid data files. All results appear nominal.

**POD** is continuing to work on calibration solutions using gyro timing bias corrected ANC05 files. Final calibrated ANC products for DoY 287-361 will be delivered to SIPS this week, while DoY 362-054 products will be calibrated and delivered early next week.

PPD: The PPD team continues to focus on ANC05 improvements by continued analysis of the LRS laser side (laser motion). We also continue to characterize the LRS stellar side for potential use in the future.

**ISF**:

All ATLAS housekeeping data is nominal
Laser 2 is firing at energy level 4 and in science mode
WTEM Peak to Edge Ratio: 1.185
Laser 2 Temperature Error: -0.26C
SADA in Sailboat Mode
Spacecraft orientation: - X

Mission Planning:

MW34 ATS is loaded to the spacecraft and currently operating
MW35 is being planned. All activities were deconflicted with OIB.
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Activities during the past week

ATS activities:
All ATLAS and pointing activities were routine and completed as planned

Real-time activities:
Daily/as-need: Executed standing CAR 91 and 102
2019/123/13:29 Executed standing CARs 380, 136, and 249 (note 1)

Other Activities:

DMU15 was performed successfully 2019/122:21:24:38 UTC

An updated ANC27 file was delivered to SIPS: ANC27_001_20190503000000.DAT
This file contains BSM X/Y offset update and USO frequency update.

Met with ASET and the PSO to discuss the performance trending and monitoring activities for April including working discussions on VBG science mode sweeps, AMCS Cal offset trends, LRS stellar and laser side analysis efforts, and other trending studies.
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Next week's ATLAS activities:
Routine instrument and pointing calibration scheduled activities are in the MW34 ATS. (see attached)

Other Near-term activities:

Updates to the onboard receiver algorithm v7b parameters continue being tested at FLATLAS. This will be part of MW35.
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Notes/Issues:

1. CAR 249 Updates the onboard AMCS BSM XY offset to (20.7, 9.0)
   CAR 380 Clear Spacewire SDI HW and FW stats (yellow errors)
   CAR 136 Clear Spacewire Channel 8 error (yellow)

2. Updated MW33 activity list with TOO times.

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LTO Schedule:

All items remain on schedule
ATLASCCR002 PDB E.0.1 install in operations to be Boarded at FOT CCB NET

**SIPS**:

- The SIPS is operating nominally:
  - Ingested and distributed Level 0 data to the ISF.
  - Generated L1A and L1B products and distributed ATL02s to the ISF, POD, and SCF.
  - Distributed selected ATL01s to the ISF and SCF by special request.
  - Generated rapids ATL03 using ANC03/04/05 files from the CAMS.
  - Distributed ATL03 (rapids) to the SCF.
- SIPS Build 4.1 was successfully installed on May 3 and is now operational
  - It includes ASAS V5.1 (part 2) and SDMS V6.15.0 & Atlas V1.13.0
  - Real-time ATL01 and ATL02s will be produced as release 204
  - Rapid ATL03, ATL04, and ATL09s will be produced as release R209 and distributed to the SCF.
  - Final ATL03, ATL04, ATL06, ATL07, ATL08, ATL09, ATL10, ATL12, and ATL13s will be produced as release 209 and distributed to NSIDC and the SCF.
- Reprocessed ATL01 and ATL02 products from Oct 14, 2018 through May 3, 2019 as release 204.
- Started reprocessing ATL03, ATL04, ATL06, ATL07, ATL08, ATL09, ATL10, ATL12, and ATL13 finals from Oct 14-19, 2018 using the Release 005 ANC03/04/05 files from the POD.

**ASAS**:

Processed several ATL03s with release 005 POD/PPD files as a preview of Release 209 to verify the improvements in the POD/PPD data.

Fixed an L1A array alignment error in one of the seldom-seen diagnostic packets.

Updated all the L1B time-of-flight code in an attempt to match results from double-precision based Python code. Differences were reported at the 1e-13 seconds level. New results under evaluation.

Continue to work on the receiver skews. Late in the week, we think the root cause of the inconsistencies was determined. Evaluating the results from new skews now.

Completed initial coding for long period equilibrium tides.

Began development of an interface for the GEBCO bathymetry.

Added relative humidity to ATL04 and ATL09. Addressed product unit changes.

Continued to work on matching ocean segments with the ATBD code.

Found and fixed an issue related to an uninitialized value in the land/veg surface-finding code.

Continued to develop unit tests for ATL16 and ATL17.

**SCF**:
The SCF is operating nominally. Data for releases 203 and 208 are being ingested and distributed. Preparations are being made for the ingest of release 204, 209, and R209 data, and older data are being deleted as needed to ensure the ingest and distribution of new data proceed smoothly. A file listing the current SCF data holdings is attached.

* Data Management -- Some modifications to the code that will improve operations in/with SDMS are being developed. After sufficient testing, these will be brought into operations when feasible. Work on file hold/publish has identified a bug; the basic fix is known but needs to be implemented and tested.

* Subsetter -- Most of the issues discovered last week have been resolved and are being tested. A few are being documented as known issues with the Python 2 code and will be fixed in the Python 3 code.

* Visualizer -- Product data frames for use with ASAS v5.1 data have been made and are being tested before they are distributed to users. We plan to have these available next week for use with the new data releases.

**ATL02/Instrument Science**:
The problem with CAL 49 (receiver channel skews) was determined to be caused by incorrectly identifying rising/falling toggle values for all photon-detection events when computing CAL 49. This error was caused, at least in part, by a similar error in the documentation, but not in the code, for ATL01, ATL02, and ATL03. The ATL02 ATBD will be corrected immediately, and the error in the current version of CAL 49 will be noted in the "ATL02 Known Issues" document to accompany Release 001. A corrected version of CAL 49 will be used for Release 002.

The ATL02 ATBD has been distributed to a wider audience within the PSO for final review before release.

Life testing has resumed on the Flight 1 laser.

**ATL03**:
Review of ASAS test granules including new POD/PPD solutions turned up no problems prior to the generation of ATL03 release 209 (final) granules. We identified high-priority issues to work this summer prior to release 002, including range bias determination, providing information all possible photons for range residual analysis, and potentially revising the rules for reference photon selection.

**ISF ACTIVITIES MISSION WEEK 034:**

* Not in science mode
^ Could affect science data quality

^ 2019/122:01:55:04.0000 AMCS Cal for 2 minutes over open ocean
* 2019/122:02:17:27.0000 TEP data collection for 3 minutes
^ 2019/122:03:18:30.0000 AMCS Cal for 2 minutes over open ocean
* 2019/122:03:51:44.0000 TEP data collection for 3 minutes
  2019/122:04:41:23.0000 OCEANscan  (22 minutes)
* 2019/122:05:26:01.0000 TEP data collection for 3 minutes
* 2019/122:07:00:19.0000 TEP data collection for 3 minutes
* 2019/122:08:34:36.0000 TEP data collection for 3 minutes
* 2019/122:09:47:49.0000 TEP data collection for 3 minutes
* 2019/122:11:22:06.0000 TEP data collection for 3 minutes
* 2019/122:12:56:24.0000 TEP data collection for 3 minutes
* 2019/122:14:30:41.0000 TEP data collection for 3 minutes
^ 2019/122:14:57:01.0000 AMCS Cal for 2 minutes over open ocean
* 2019/122:16:04:58.0000 TEP data collection for 3 minutes
  2019/122:16:28:38.0000 OCEANscan  (22 minutes)
* 2019/122:17:39:16.0000 TEP data collection for 3 minutes
^ 2019/122:18:04:53.0000 AMCS Cal for 2 minutes over open ocean
* 2019/122:19:13:33.0000 TEP data collection for 3 minutes
^ 2019/122:20:47:36.0000 DMU0015 for 72 minutes
* 2019/122:22:43:12.0000 TEP data collection for 3 minutes
* 2019/123:00:17:30.0000 TEP data collection for 3 minutes
  2019/123:01:09:40.0000 TOO (TOOid=947) for 3 minutes
* 2019/123:01:51:47.0000 TEP data collection for 3 minutes
^ 2019/123:02:53:36.0000 AMCS Cal for 2 minutes over open ocean
* 2019/123:03:26:04.0000 TEP data collection for 3 minutes
  2019/123:04:15:43.0000 OCEANscan  (22 minutes)
* 2019/123:05:00:22.0000 TEP data collection for 3 minutes
^ 2019/123:06:01:00.0000 Stellar centroid window dump for 90 minutes (no stellar centroids)
* 2019/123:08:08:56.0000 TEP data collection for 3 minutes
* 2019/123:09:22:09.0000 TEP data collection for 3 minutes
* 2019/123:10:56:27.0000 TEP data collection for 3 minutes
* 2019/123:12:30:44.0000 TEP data collection for 3 minutes
* 2019/123:14:05:02.0000 TEP data collection for 3 minutes
^ 2019/123:14:31:22.0000 AMCS Cal for 2 minutes over open ocean
* 2019/123:15:39:19.0000 TEP data collection for 3 minutes
  2019/123:16:02:59.0000 OCEANscan  (22 minutes)
* 2019/123:17:13:36.0000 TEP data collection for 3 minutes
^ 2019/123:17:39:57.0000 AMCS Cal for 2 minutes over open ocean
* 2019/123:18:47:54.0000 TEP data collection for 3 minutes
* 2019/123:20:22:11.0000 TEP data collection for 3 minutes
* 2019/123:22:17:33.0000 TEP data collection for 3 minutes

* 2019/123:23:51:50.0000 TEP data collection for 3 minutes
* 2019/124:01:26:08.0000 TEP data collection for 3 minutes
^ 2019/124:02:28:41.0000 AMCS Cal for 2 minutes over open ocean
* 2019/124:03:00:25.0000 TEP data collection for 3 minutes
  2019/124:03:50:04.0000 OCEANscan  (22 minutes)
* 2019/124:04:34:43.0000 TEP data collection for 3 minutes
^ 2019/124:05:37:21.0000 AMCS Cal for 2 minutes over open ocean
* 2019/124:06:09:00.0000 TEP data collection for 3 minutes
* 2019/124:07:43:17.0000 TEP data collection for 3 minutes
^ 2019/124:08:17:02.0000 Laser Dark Image Dump over Greenland for 7 minutes
* 2019/124:08:56:30.0000 TEP data collection for 3 minutes
* 2019/124:09:17:35.0000 TEP data collection for 3 minutes
* 2019/124:10:30:48.0000 TEP data collection for 3 minutes
  2019/124:15:37:19.0000 OCEANscan  (22 minutes)
* 2019/124:21:51:54.0000 TEP data collection for 3 minutes
* 2019/124:23:26:11.0000 TEP data collection for 3 minutes
* 2019/125:01:00:29.0000 TEP data collection for 3 minutes
^ 2019/125:02:03:43.0000 AMCS Cal for 2 minutes over open ocean
* 2019/125:02:34:46.0000 TEP data collection for 3 minutes
  2019/125:03:24:25.0000 OCEANscan  (22 minutes)
* 2019/125:04:09:03.0000 TEP data collection for 3 minutes
^ 2019/125:05:12:24.0000 AMCS Cal for 2 minutes over open ocean
* 2019/125:05:43:21.0000 TEP data collection for 3 minutes
  2019/125:06:25:13.0000 RTWscan  (90 minutes)
* 2019/125:08:51:55.0000 TEP data collection for 3 minutes
* 2019/125:10:05:08.0000 TEP data collection for 3 minutes
  2019/125:16:45:58.0000 OCEANscan  (22 minutes)
^ 2019/125:21:15:00.0000 Stellar centroid image dump for 90 minutes (no stellar centroids)
* 2019/125:23:00:32.0000 TEP data collection for 3 minutes
* 2019/126:00:34:49.0000 TEP data collection for 3 minutes
^ 2019/126:01:45:52.0000 AMCS Cal for 2 minutes over open ocean
* 2019/126:02:09:07.0000 TEP data collection for 3 minutes
^ 2019/126:03:13:04.0000 AMCS Cal for 2 minutes over open ocean
* 2019/126:03:43:24.0000 TEP data collection for 3 minutes
  2019/126:04:33:03.0000 OCEANscan  (22 minutes)
* 2019/126:05:17:41.0000 TEP data collection for 3 minutes
  2019/126:05:59:34.0000 RTWscan  (90 minutes)
* 2019/126:08:26:16.0000 TEP data collection for 3 minutes
* 2019/126:09:39:29.0000 TEP data collection for 3 minutes
  2019/126:16:20:18.0000 OCEANscan  (22 minutes)
* 2019/126:22:34:52.0000 TEP data collection for 3 minutes
* 2019/127:00:09:10.0000 TEP data collection for 3 minutes
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* 2019/127:06:26:19.0000 TEP data collection for 3 minutes
* 2019/127:08:00:37.0000 TEP data collection for 3 minutes
* 2019/127:09:13:50.0000 TEP data collection for 3 minutes
* 2019/127:10:48:07.0000 TEP data collection for 3 minutes
  2019/127:15:54:39.0000 OCEANscan  (22 minutes)
* 2019/127:22:09:13.0000 TEP data collection for 3 minutes
* 2019/127:23:43:31.0000 TEP data collection for 3 minutes
* 2019/128:01:17:48.0000 TEP data collection for 3 minutes
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